

REMARKS

Claims 1-9 presently are pending. New claim 9 has been added. Reconsideration and allowance of all claims are respectfully requested in view of the following remarks.

The Examiner acknowledged the claim for foreign priority under 35 U.S.C. § 119 and checked the box “all” on the Form PTO-326. However, the Examiner failed to check the box next to “certified copies of the priority documents have been received.” Accordingly, Applicant respectfully requests that the Examiner check the appropriate box in the next Office Action.

Moreover, the Examiner objects to the disclosure because priority to a foreign application allegedly must be stated at the beginning of the application. However, there is no such requirement and the Examiner has failed to cite any authority for her position. For example, MPEP 201.13 indicates that a priority claim need not be in any special form and may be a statement signed by a registered attorney or agent and can be made on filing such as by a copy of an unexecuted or executed Oath or declaration specifying a foreign priority claim (see Part A. entitled “The Priority Claim” on page 200-77 of the MPEP).

Claims 1-4 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Leckey et al. (U.S. Patent No. 3,427,723). Further, claims 5-8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Leckey et al. in view of Helgren (U.S. Patent No. 5,551,906). For the following reasons, these rejections are respectfully traversed.

An apparatus consistent with the present invention relates to a peripheral surface shape measuring apparatus which can simply and accurately measure a peripheral surface shape of a roll-like object 14. The peripheral surface shape of a roll-like object 14 is measured by moving a

displacement amount measuring device 16 which pinches a diameter direction of the roll-like object with a sensor part 26 and a reference point part 28 arranged opposite to each other in the diameter direction of the roll-like object, from one end side to the other end side in an axial direction of the roll-like object 14 by using a moving device 18.

In the rejection of claims 1-4 under § 102(b), the Examiner maintains that Leckey et al. (hereinafter "Leckey") discloses all of the recitations of the noted claims including a pinching device 60 which pinches the roll-like object in a diameter direction thereof with a sensor part 86 and a reference point part 84 arranged opposite to each other (referencing the embodiment of Figures 6 and 7 of Leckey).

Leckey relates to a roll profiler for measuring the differential stretch in a web of material wound into a roll. In the embodiment shown in Figures 6 and 7 (see column 5, line 68 through column 6, line 75), Leckey discloses a carriage in the form of a saddle 60 slidably mounted upon a support bar or shaft 62 which has attached thereto two branched support pads 64 and 66 which rest atop a paper roll 68. The branched pads 64 and 66 hold the support bar in a position parallel to the longitudinal axis of the paper roll 68. To aid in the stability of the saddle 60, a ball bearing ring 63, suitably split to permit the passing of upright portions 72 and 74 of the branched pads 64 and 66, is interposed between the saddle 60 and support bar 62. Such an arrangement of the saddle 60 upon the support bar 62 permits slight rocking movement of the device upon the support bar to facilitate its placement upon the paper roll.

A pair of gauge arms or brackets 76 and 78 are disposed such that they straddle the paper roll 68 when the apparatus is in the operative position. At the lower end of the gauge arm 76, a

guide 80 is located which is slidable along the gauge arm 76 and is held at various positions therealong by a set-screw 82. On the other hand, at the lower end of the guide arm 78, a sensor 86 is positioned and is slidable along the gauge arm 78 so as to be held in various position therealong by a set-screw 82. The purpose of the set-screws is to permit the guide 80 and the sensor 86 to be set into position upon an element of paper rolls of varying sizes. To aid in this adjustment, markings are made upon the gauge arms.

However, the brackets 76 and 78 having the guide 80 and sensor 86, respectively, located thereon are not a pinching device. Independent claim 1 has been amended in order to define more clearly the structure of the pinching device 24 to include the two arms 20, 20 connected together at first end portions with a hinge 22, and with the sensor part and the reference point part being arranged opposite to each other in second end portions of the two arms. Quite clearly Leckey, whether taken alone or together with Helgren, fails to teach or suggest such a pinching device which includes a pair of arms which are connected together with a hinge. In this regard, the hinge 22 of the present invention has an advantage that the apparatus is applicable for roll-like objects with large to small diameters, as opposed to the rigid bracket structure shown in the embodiment of Figures 6 and 7 of Leckey and which requires the sensor 86 and guide 80 to slide along the rigid arms.

With respect to the rejection of claims 5-8 under 35 U.S.C. § 103(a), the Examiner further relies on the secondary teaching of Helgren to modify Leckey to include the ability to set the contact positions within ± 5 millimeters with respect to the diameter direction.

In the Paragraph bridging columns 5 and 6 of Helgren, Helgren points out that in a preferred arrangement the surface inspecting device 50 is arranged on a caliper arm 20 so that a desired distance between the surface inspecting device 50 and a surface of the workpiece W is within the range of about 2 to 3 millimeters. However, this distance is referring to a distance parallel to the diameter direction of the workpiece since it talks about the distance *between* the surface inspecting device 50 and the surface of the workpiece W. In contradistinction, Applicant's claim 5 clearly recites that the contact portions to the roll peripheral surface of the sensor part and the reference point part which pinch the roll-like object are within the range of ± 5 millimeters with respect to the diameter direction *in a plane perpendicular to the diameter direction* (i.e., see the direction L as best shown in Figure 2 of the subject application).

The present invention aims at measuring shapes of an outer diameter size of a bulk roll, that is, relative differences of the diameters, not absolute values of the outer diameter size. For this reason, the range of ± 5 mm is made to refer to the diameter direction in a plane perpendicular to the diameter direction. Therefore, an apparatus with the hinge is capable of accurately obtaining relative values of the diameter if the range is within ± 5 mm regardless of varied values of the diameter of the bulk roll. The apparatus of the present invention accurately detects a peripheral surface shape of the bulk roll by the above-described hinge structure.

A new independent claim 9 has been added which combines original claims 1 plus 5. Clearly, Leckey and Helgren, whether taken alone or together, fail to teach or suggest such a pinching device.

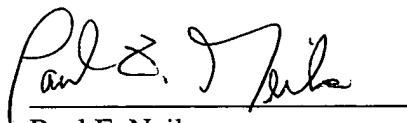
AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Patent Application No. 09/993,762

Applicant has made minor editorial corrections to the specification as shown in the attached Appendix.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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PATENT TRADEMARK OFFICE

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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The specification is changed as follows:

Page 2, first full paragraph:

However, in the case of the conventional peripheral surface shape measuring apparatus of a roll-like object described in Japanese Patent Application Publication No. 8-102064, the displacement amount at the time when the shape sensor **a** rotates is measured with respect to the mounting position of the measuring device, and therefore, there is such a disadvantage that the measurement error becomes large unless the measuring device is provided so that the shape sensor **a** moves completely in parallel to the central axis of the roll-like object 14. For example, if the moving direction of the shape sensor **a** is inclined to the central axis of the roll-like object 14, the measurement is performed inflating the score by the degree corresponding to the inclination, and the measuring accuracy is lowered. Accordingly, in order to raise the measuring accuracy, the mounting accuracy of the measuring device to the roll-like object 14 should also be raised, but a delicate apparatus is necessary for that purpose, and therefore, not only does the apparatus [becomes] become complicated but also [the] a cost [up] increase is caused.

IN THE CLAIMS:

The claims are amended as follows:

1. (Amended) A peripheral surface shape measuring apparatus of a roll-like object which measures a peripheral surface shape of a roll-like object, comprising:

a displacement amount measuring device which has a pinching device including two arms connected together at first end portions with a hinge and that [pinches] pinch the roll-like object in a diameter direction of the roll-like object with a sensor part and a reference point part arranged opposite to each other in second end portions of the two arms, and which measures a displacement amount when the sensor part is relatively displaced in the diameter direction with respect to the reference point part; and

a moving device which moves the displacement amount measuring device from one end side of the roll-like object to another end side of the roll-like object in an axial direction of the roll-like object,

wherein the peripheral surface shape of the roll-like object is measured on the basis of the displacement amount of the sensor part accompanied by movement of the displacement amount measuring device.

Claim 9 is added as a new claim.